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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/747,709      | 12/20/2000  | David L. Graumann    | 42390P4188C         | 4280             |

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EXAMINER

PENDLETON, BRIAN T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2644

DATE MAILED: 12/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/747,709

Applicant(s)

GRAUMANN ET AL.

Examiner

Brian T. Pendleton

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10,12-14,16,17 and 19-24 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

- 6) ☒ Claim(s) 1-10,12-14,16,17,19-24 is/are rejected.

- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 10/8/02 have been fully considered but they are not persuasive. Examiner contends that Vahatalo et al do disclose two signal streams to estimate latency. As shown in figure 4 of Vahatalo et al, the two signal streams are the signal  $R_{in}$  which represents a signal received into the echo canceller B and the signal  $S_{in}$  received from the hybrid line B. The echo path is the entire path from the echo canceller B to the hybrid B and from the hybrid B back to the echo canceller B. The echo path is the sum of  $D_t$  and  $D_r$ . The created signal streams are the stream sent from the echo canceller A and the stream received back from the hybrid B. Although the echo delay calculated in Vahatalo et al is directed to hybrid line echo, there still was calculation of latency of an audio channel (the hybrid line).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 12, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vahatalo et al. Vahatalo et al disclose a method for determining the location of an echo comprising sampling means 45 and 46, calculation means 44, adjustable delay means 43 and adaptive filter 40. As disclosed in the abstract and

Art Unit: 2644

column 4 line 63 – column 8 line 50 and figure 5B, Rin and Sin are two waveforms in an audio channel which are used to calculate the delay from the outgoing echo location and the returned echo. The delay is set in adjustable delay element 43. Vahatalo et al do not disclose that the location of the echo is calculated for an audio channel in a computer. Echo existed in acoustic environments and hybrid line environments. The method of determining the echo location would have been the same in either environment, as one of ordinary skill in the art would have known. Said method would require identifying the outgoing signal in part of the incoming signal, regardless if the signals were propagated through the air or transmission line. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply the technique used for echo location in transmission lines in systems having acoustic echo, such as computer/telephone speakerphones. Claims 1 and 12 are met. Regarding claims 19 and 22, Vahatalo et al do not disclose a machine readable storage medium which executes the method. Nonetheless, it was obvious at the time of invention to perform signal processing methods through the use of microcomputers where the method steps are instructions on machine readable storage media. The use of microcomputers adds efficiency and speed to the process.

Claims 2-4, 7-10, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vahatalo et al in view of Park et al. Vahatalo et al discloses a method for determining the location of an echo comprising detecting the presence of two signal streams in an audio channel and measuring the time between the detections and delaying one of the signals in response to the measurement. However, the subject

Art Unit: 2644

matter of Vahatalo et al is directed to hybrid circuit echo cancellation and does not disclose a signal output and input device for acoustic echo cancellation. Park et al discloses an apparatus for speakerphone (acoustic) echo cancellation having a microphone 21 (per claim 3) and speaker 22 (per claim 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Vahatalo et al in the invention of Park et al since both hybrid and acoustic echo cancellation were known to use echo delay determination techniques. Per claim 7, the signal is inherently a sine wave. Per claim 8, there is disclosed sampling means 45 and 46 in Vahatalo et al. Regarding claims 9 and 16, there are two different paths. Per claims 10 and 17, it was obvious to utilize the invention in a personal computer since it was advantageous to use it wherever echo posed a problem (speakerphone).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vahatalo et al in view of Park et al as applied to claim 2, and further in view of Hollier. The combination of Vahatalo et al and Park et al does not disclose that the waveform created is a chirp or pseudo-random sequence. The waveforms used in the delay calculation are actually voices. Hollier discloses a method for testing telecommunications equipment. In column 1 lines 32-39, it is disclosed that a chirp signal or pseudo random signal can be use to characterize the behavior of a telecommunications system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a chirp or pseudo-random signal as the test signal in the combination of Vahatalo et al and Park et al. As suggested by Hollier, it was common practice to use such waveforms in the testing of

Art Unit: 2644

telecommunications systems. In addition, the use of known signals to calculate the delay would have been more reliable, thereby prompting one of ordinary skill in the art to use them.

Claims 13, 14, 20, 21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vahatalo et al in view of Hollier. Vahatalo et al disclose a method of characterizing the latency of an audio channel using waveforms. However, Vahatalo et al do not disclose that the waveform created is a chirp or pseudo-random sequence. The waveforms used in the delay calculation are actually voices. Hollier discloses a method for testing telecommunications equipment. In column 1 lines 32-39, it was disclosed that a chirp signal or pseudo random signal can be use to characterize the behavior of a telecommunications system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a chirp or pseudo-random signal as the test signal in the combination of Vahatalo et al. As suggested by Hollier, it was common practice to use such waveforms in the testing of telecommunications systems. In addition, the use of known signals to calculate the delay would have been more reliable, thereby prompting one of ordinary skill in the art to use them. Claims 13, 14, 20, and 23 are met. As to claims 21 and 24, any system, such as a computer system employing speakerphone capabilities, subject to echo cancellation would have benefited from determining the echo time, therefore one would have been motivated to use an echo location system, such as that described by Vahatalo et al, in a personal computer.

### ***Conclusion***

Art Unit: 2644


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



Brian Tyrone Pendleton  
December 28, 2002



FORESTER W. ISEN  
SUPERVISORY PATENT EXAMINER  
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